

# Salah Altoubat

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**Salah Altoubat** is Professor and Current Chairman of the Department of Civil and Environmental Engineering at the University of Sharjah. He received his Ph.D in Civil Engineering from the University of Illinois at Urbana-Champaign in 2000. He has industrial and academic experience in North America and in the Middle East. His expertise spans materials engineering, structural engineering and civil engineering infrastructure. He is a recipient of the American Concrete Institute (ACI) Wason Award for the most meritorious paper. He is a recipient of the UOS Award for Excellence in Research in 2010 and 2017; and for Excellence in teaching in 2014. Previously, he was a senior research associate at W. R. Grace, Cambridge, USA. Dr. Altoubat is a member of **ACI 544** (fiber reinforced concrete) and **ACI 440** (fiber-reinforced polymer) and **ACI 564** (3D Printing). He has published more than **90** peer-reviewed articles and he is **co-inventor of two USA Patents** that lead to a commercial product. He has been also involved in consulting work at the national and international levels. His current research interest includes sustainability and durability aspects of concrete; structural applications of concrete composites; advanced composites and concrete technology; early age behavior of concrete, creep, shrinkage and cracking of concrete.

## EDUCATION

**University of Illinois at Urbana-Champaign, Illinois** 1994-2000

- **Ph. D.** in Civil Engineering
- Research Areas: Concrete Structures and Materials
- Adviser: Prof. David Lange
- Dissertation Title: Early age stresses and creep-shrinkage interaction of restrained concrete

**Jordan University of Science & Technology, Irbid-Jordan** 1987-1990

- **M.Sc.**, in Civil Engineering
- Emphasis Areas: Structures and Materials
- Thesis Title: Comparative evaluation of accelerated curing methods of concrete in Jordan

**Yarmouk University, Irbid, Jordan** 1982-1987

- **B.S.**, in Civil Engineering - structures emphasis (5-years program)

## ACADEMIC EXPERIENCE

- **Department Chair**, University of Sharjah Sep 2017 – Sep 2020
- **Professor**, University of Sharjah, UAE, Jan 2018- Present
- **Associate Professor**, University of Sharjah, UAE, Jan 2011- Dec 2107
- **Assistant Professor**, University of Sharjah, UAE , Sep 2002 – Jan 2011
- **Courses taught:**
  1. Advanced Materials for Construction (Master Course)
  2. Advanced Behavior and Design of concrete Structures (Master Course),
  3. Prestressed Concrete Design (Senior course),
  4. Structural Analysis II (senior course),
  5. Reinforced Concrete Design (Senior course),
  6. Mechanics of Material (junior Course),
  7. Statics (junior course),
  8. Construction Engineering (senior course),
  9. Specification and Quantity Surveying (senior course),
  10. Senior design project course and independent study on concrete material:
- **Service Committees:**
  1. Department Chairman, Civil and Environmental Engineering
  2. Coordinator of CEE Master Program
  3. Chair of Accreditation Committee for Master Program
  4. Member of the ABET Accreditation Committee of CEE Program
  5. Member of the College Council
  6. Chair of College Research and Scholarship Committee;
  7. Chair and member of the College IT committee;
  8. Chair and member of Support Services committee;
  9. Member of the University Faculty Affairs committee;
  10. Member of the undergraduate curriculum committee;
  11. Coordinator of the senior design project;
  12. Member of the University Faculty Housing Committee
  13. Member of the University Recruitment Committee for Administrative Positions

## ADMINISTRATIVE EXPERIENCE

- **Department Chair**, University of Sharjah Sep 2017 – Sep 2020
- **Coordinator of Master Program**, University of Sharjah, UAE, 2010- 2017
- **Coordinator of Research Group**, University of Sharjah, UAE, 2015 - Present

- **Selected Funded Research Projects**

Project Title	PIs/ Collaborators	Funding Agency	Fund
Experimental Study on the Shear Strength of Externally Bonded Carbon Fiber Reinforced Polymer (EB-FRP) Reinforced Concrete (RC) Beams.	Dr. Moussa Leblouba, Prof. Samer Barakat, Prof. Salah Altoubat, Dr. M. Talha Junaid	UOS	80000 AED
Restrained Shrinkage Behavior of Ambient Cured Geopolymer Concrete.	M. Talha Junaid, Salah Altoubat and Moussa Leblouba	UOS	69100 AED
Punching Shear Strength of Reinforced Concrete Slabs with Macro Synthetic Fibers	Salah Altoubat, Mohamed Maalej, Pierre Estephane	UOS	75000 AED
Rapid Strengthening of Unreinforced Masonry Walls for Out-of-Plane Action Using Fiber Reinforced Shotcrete.	Salah Altoubat, Mohamed Maalej, Samer Barakat, Moussa Leblouba, Pierre Estephane	UOS	60000 AED
Innovative Vibration Attenuation Devices for Equipment and Structures	Mohmed Maalej, Moussa Leblouba, Salah Altoubat, Samer Barakat	UOS	48000 AED
Experimental Study on Shear strength of trapezoidal corrugated steel webs.” University of Sharjah, Sep. 2015 - 2 years.	Samer Barakat, Salah Altoubat, Mohamed Maalej, Moussa Leblouba, ,	UOS	60000 AED
Estimation of Earthquake Hazards in Sharjah	Samer Barakat, Salah Altoubat, Mohamed Maalej, Moussa Leblouba,	UOS	200000 AED
Large Scale Testing of Fiber Reinforced Concrete Slab on Ground , 2004	Dr. Salah Altoubat, UOS, Prof. David Lange, and Dr. Jeff Roesler, UIUC, USA	W. R. Grace, Cambridge	40000 US\$
Shear Behavior of Fiber Reinforced Concrete Beam, 2008	Dr. Salah Altoubat, UOS, and DR. Alex Rieder, W. R. Grace, USA	Juma Almajid, Dubai and W. R. Grace, USA	30000 US\$
Diaphragm Testing of Fiber Reinforced Composite Metal Decks, 2009	Dr. Salah Altoubat, UOS,	Richard Lee Steel Deck, UK, and W. R. Grace, Cambridge USA, and Emirates Stone, UAE, and UOS	50000 US\$

		Laboratories	
Effect of Synthetic Fibers on Shrinkage cracking of composite metal decks, 2010	Dr. Altoubat, UOS	W. R. Grace, Europe	20000 US\$

- **Selected Funded Master Thesis Supervised**

<u>Project Title</u>	<u>Student Name</u>	<u>Funding Agency</u>	<u>Student current position</u>
Shear Strengthening of Reinforced Concrete Beams using Fiber Reinforced Polymer	Abdul Saboor Karzad	Fosroc, Emirates Stones	Full time Instructor in AUS
Shear Behavior of Fiber Reinforced Concrete Beam	Ardavan Yazdanbakhsh	Juma Almajid, Dubai	Associate Professor at College City New York, USA
Diaphragm Behavior of Fiber Reinforced Composite Metal Decks	Hussein Usman	Richard Lee Steel Deck, UK, and W. R. Grace, Cambridge USA, and Emirates Stone, UAE	Lecturer, Architectural Engineering, UOS, currently Ph. D Candidate at University of Sherebrook, Canada
Effect of Supplementary Cementitious Materials on Shrinkage Cracking of Self Compacting Concrete	Deena Badran	Concretec, Dubai and Graduate College, UOS	Manager, structural division, Dubai, UAE
Effect of Synthetic Fibers on Shrinkage cracking of composite metal decks	Sami Elkhidir	W. R. Grace, Europe	Operation Manager Oubedoullah Contracting, UAE

## **VISITING ACADEMIC SCHOLAR**

- **Invited Research Scholar to W. R. Grace, USA, Summer 2007:**  
Performing joint Research on post-cracking creep behavior of composite metal decks with synthetic macro fibers.
- **Invited Visiting Scholar to W. R. Grace, USA, Summer 2006:**  
Performing joint Research on the cracking behavior of elevated metal composite decks reinforced with synthetic macro fibers.
- **Invited Visiting Scholar to W. R. Grace, USA, Summer 2005:**  
Performing joint Research on the toughness of fiber reinforced concrete and developed design guidelines for FRC Structures.
- **Invited Visiting Scholar to the University of Illinois at Urbana-Champaign, Illinois, Summer 2004:**  
Establishing and performing joint Research on the Structural Applications of fiber reinforced concrete

## RESEARCH EXPERIENCE

### ➤ **Senior Research Engineer, W. R. Grace, Cambridge, MA** Sept 2001 – Aug 2002

- Performing research to develop high performance synthetic fibers and to characterize the behavior of Fiber Reinforced Concrete for applications in pre-cast, septic tanks, slabs on ground, elevated slabs, bridge decks and shotcrete. The post-cracking behavior of FRC is characterized for these applications and fibers are optimized accordingly.
- Performing closed-loop fracture and toughness tests for FRC and designing large scale testing of FRC slabs on ground.
- Developing design tools for fiber reinforced concrete applications on slab on grounds using the yield line theory.
- Working with different States DOT's and Code bodies to develop specifications to incorporate fibers in design for performance.
- Providing technical service to Grace sales managers worldwide to promote fibers for structural applications

### ➤ **Post Doctoral Research Associate, University of Illinois-Urbana, IL** Sep 2000 – Sep 2001

- Performed research on early age behavior of high-performance concrete (HPC) for bridge decks and pavement applications, sponsored by the Illinois Department of Transportation (IDOT). The project focused on the effect of mixture composition of HPC, admixtures (silica fume, fly ash, metakaolin, superplasticizer, water reducer, air entrainment), and curing practices on early age behavior, cracking, tensile creep and shrinkage. The project aimed at establishing guidelines for the use of HPC in bridge decks.
- Performed research on the effect of shrinkage reducing admixtures (SRA) on early age creep and shrinkage of HPC, sponsored by the National Science Foundation Center for Advanced Cement-Based Materials (ACBM). The project aimed at characterizing HPC with different SRA 's
- Involved in instrumentation for bridge decks and analysis of Field data
- Developed test techniques to characterize early age behavior of concrete

### ➤ **Graduate Research Assistant, University of Illinois-Urbana, IL** May 1995 – Sep 2000

- Project focus: "**Fiber Reinforced Concrete for High Performance Airport Pavement**", Sponsored by Federal Aviation Administration (FAA).
- Designed and conducted automated experiments for shrinkage, creep, stress relaxation and cracking of restrained concrete at early age
- Performed numerical modeling of tensile creep and shrinkage of concrete
- Developed analytical and experimental techniques to model tensile creep-shrinkage interaction

## **CONSULTING EXPERIENCE:**

- **Consultant for W. R. Grace, USA**
  - Develop research and development (R&D) tools for durability of concrete and its performance
  - Developed design guidelines for fiber reinforced concrete FRC
  - Develop a design Software for design of slab on ground with FRC
  - Provide expert opinions on assessment, applications, and design of concrete and fiber reinforced concrete

## **WORKING EXPERIENCE**

- **Arab Center for Engineering Studies, Amman- Jordan** July 1990 - July 1994
- Designed and supervised rehabilitation for deteriorated and damaged structures. The following were some of the projects involved with
  - Investigation of damage and design of rehabilitation for Ramada restaurant and Safe-Way Market Place Building that were exposed to a terrible damaging fire in Amman-Jordan
  - Inspection of deterioration due to corrosion of reinforcing bars and carbonation of concrete in the Dar Al-Dawa Factory Building in Sahab, Jordan. A rehabilitation design package was prepared to remedy the damage and to reinstate the integrity of the concrete structure.
  - Strengthening of poorly designed short buildings on expansive soils, which usually resulted on wall cracking and serviceability problems. Repair of the cracks and strengthening of the foundation in the form of underpinning were designed for many private concrete buildings in Amman-Jordan
  - Involved in the design of repair for damage caused to concrete footings for pipelines in a major refinery in Das-Island (UAE). The main cause of the damage was salts contamination and corrosion of reinforcement.
  - Investigated the damage caused to pre-cast building in the Alia Airport-Amman. The pre-cast concrete panels were tilted, and the cause was found to be due to poor design of the connections. The connections were re-designed, and the pre-cast panels were reinstated.
- Inspected and evaluated existing concrete structures and pavement in Jordan and Arabian Gulf. The following were some of the projects involved with
  - Evaluation of five major highways in Jordan. The evaluation included assessment of pavement condition, and material testing of the asphalt concrete mixture, base, sub-base and subgrade of the pavement structure. The study was prepared for the Ministry of Public Works in Jordan.

- Evaluation and strengthening of the structural components of existing building to accommodate demand for vertical expansion in many buildings in Jordan among them two major building for the ministry of youth and the ministry of planning. The projects included testing of the existing concrete material in the structural elements, analytical investigation, strengthening of foundation and encasement of columns.
- Performed soil investigation and stability analysis of embankment and earth structures. The following were some of the projects involved with
  - Catastrophic failure of earth cuts during the construction of Irbid-Amman highway in Jordan. Soil investigation and slope stability analysis were performed to investigate the source of damage and remedial measures were developed
  - Settlement of ground slabs and footings built in embankment in the Jordan Petroleum Refinery, Zarqa-Jordan. The footings supported large and sensitive machinery structure for the refinery. The embankment material was tested, and the degree of consolidation was examined by penetration techniques. Stabilization of the embankment by cement grouting was designed and supervised
- Performed engineering studies and planning for infrastructure projects jointly with International and Regional Consultants in the Middle East, such as ERES International, and Arab Consults. The following were some of the projects involved with.
  - Development of pavement management techniques for the Municipality of Greater Amman-Jordan. The project included pavement condition survey using the Pavement Condition Index (PCI) procedures for the road network in a major district in Amman, assessment of pavement conditions, developing pavement maintenance strategies, training of the municipality staff on the use of the PCI as a tool to evaluate pavement conditions and on the use of Micro-PAVER software to develop a database that can be used to set maintenance strategies and priorities and to allocate and forecast budgets for the various districts in Amman.
  - Inspection of rural, unpaved road network in Damar District in the Republic of Yemen. The project was part of the United Nation Development Program (UNDP) in Yemen. Soil investigation of the roads bed was carried out, and the roads conditions were examined to assess the serviceability and functioning of the road network. Maintenance strategies were developed accordingly to retain and maintain serviceability.

## PUBLICATIONS

### PEER REVIEWED JOURNAL ARTICLES

1. **Salah Altoubat**, Abdul Saboor Karzad, Mohamed Maalej, Samer Barakat, Talha Junaid, "Experimental Study of the Steel / CFRP Interaction in Shear-Strengthened RC Beams Incorporating Macro-Synthetic Fibers," *Structures*, Elsevier, [Volume 25](#), June 2020, Pages 88-98.
2. Junaid MT, Elbana A., **Altoubat S**, Flexural response of geopolymer and fiber reinforced geopolymer concrete beams reinforced with GFRP bars and strengthened using CFRP sheets, *Structures*, Elsevier, Volume 24, April, 2020, Pages 666-677
3. Moussa Leblouba, Samer Barakat, Mohammed SA Ahmed, **Salah Altoubat**, Shear strength at the interface of precast bridge concrete decks and girders subjected to cyclic loading with varying speeds", *Engineering Structures*, Elsevier, 2019, <https://doi.org/10.1016/j.engstruct.2019.109296>
4. Leblouba, Moussa; Barakat, Samer; Maalej, Mohamed; **Al-Toubat, Salah**; Karzad, Abdul Saboor; Normalized shear strength of trapezoidal corrugated steel webs: Improved modeling and uncertainty propagation, *Thin-Walled Structures* 137, 67-80, 2019, Elsevier
5. Barakat, Samer; **Al-Toubat, Salah**; Leblouba, Moussa; Al Burai, Eman; "Behavioral trends of shear strengthened reinforced concrete beams with externally bonded fiber-reinforced polymer", *Structural Engineering and Mechanics*, 69 (5), 579-589, 2019
6. Abdul Saboor Karzad, Moussa Leblouba, **Salah Al Toubat\***, Mohammed Maalej, "Repair and strengthening of shear-deficient reinforced concrete beams using Carbon Fiber Reinforced Polymer", *Composite Structures*, Volume 223, September, 2019, DOI: <https://doi.org/10.1016/j.compstruct.2019.110963>
7. Junaid MT, Elbana A., **Altoubat S**, Al-Sadoon Z, "Experimental Study on the Effect of Matrix on the Flexural Behavior of Beams Reinforced with Glass Fiber Reinforced Polymer (GFRP) Bars", *Composite Structures*, 2019. DOI: <https://doi.org/10.1016/j.compstruct.2019.110930>
8. **Salah Altoubat**, S.A Karzad, and Maalej, M. "Strengthening of Damaged Reinforced Concrete Beams Using Externally Bonded Fiber Reinforced Polymer", *ACI-Special Publication* AC-SP 327, (2018), pp. 28.1-28.12
9. Samer Barakat, Abdullah Shanableh, **Salah Altoubat** and Khader Abu-Dagga. "Assessment of Seismic Structural Risk for Model Buildings in the City of Sharjah, UAE. ", *Jordan Journal of Civil Engineering*, Volume 12, No. 1, (2018), pp. 125-138.
10. **Altoubat, Salah**, Klaus-Alexander Rieder, and M. Talha Junaid. "Short-and long-term restrained shrinkage cracking of fiber reinforced concrete composite metal decks: an experimental study." *Materials and Structures*, Vol. 50, no. 2 (2017): P.140.



11. **S. Al Toubat**, M. Talha Junaid, M. Leblouba, D. Badran, Effectiveness of fly ash on the restrained shrinkage cracking resistance of self-compacting concrete, *Cement and Concrete Composites*, Vol. 79 (2017), pp. 9-20
12. Moussa Leblouba, Samer Barakat, **Salah Altoubat**, Talha M. Junaid, and Mohammed Maalej, "Normalized shear strength of trapezoidal corrugated steel webs," *Journal of Constructional Steel Research*, 136 (2017), pp. 75-90.
13. Leblouba, Moussa, M. Talha Junaid, Samer Barakat, **Salah Altoubat**, and Mohamed Maalej. "Shear buckling and stress distribution in trapezoidal web corrugated steel beams." *Thin-Walled Structures* 113 (2017): pp. 13-26.
14. Shaikh, F. U. A., Maalej, M., and **Altoubat, S.** (2017) "Ductile fibre reinforced cementitious composites (DFRCC) for improved corrosion durability of reinforced concrete columns," *AIMS Materials Science* (AIMS Press, USA) Vol. 4, No. 5, pp. 1078-1094. (DOI: 10.3934/matserci.2017.5.1078).
15. **Altoubat, Salah**, Deena Badran, M. Talha Junaid, and Moussa Leblouba. "Restrained shrinkage behavior of Self-Compacting Concrete containing ground-granulated blast-furnace slag." *Construction and Building Materials*, Vol. 129, (2016): pp. 98-105,
16. **Altoubat, S.**, M. Maalej, and F. U. A. Shaikh. "Laboratory Simulation of Corrosion Damage in Reinforced Concrete." *International Journal of Concrete Structures and Materials*, Vol 10, No. 3, (2016), pp. 383-391.
17. **Altoubat, S.**, Ousmane, H., & Barakat, S. (2016). Experimental Study of In-Plane Shear Behavior of Fiber-Reinforced Concrete Composite Slabs. *ASCE Journal of Structural Engineering*, 142(3), (2016), 04015156.
18. Moussa Leblouba, **Salah Al Toubat**, Muhammad Ekhlaur Rahman, and Omer Mugheida, "Practical Soil-Shallow Foundation Model for Nonlinear Structural Analysis," *Mathematical Problems in Engineering*, vol. 2016, Article ID 4514152, 10 pages, 2016. doi:10.1155/2016/4514152
19. **Salah Altoubat** and Haidar Alhaidary "Experimental Study on the Restrained Shrinkage Cracking of FRC Composite Metal Decks" *International Journal of Theoretical and Applied Mechanics*, ISSN: 2367-8984,1, (2016), 149-154
20. Samer Barakat, **Salah Altoubat**, Eman Al Burai. "Shear Strengthening Reinforced Concrete Beams with Externally Bonded Fiber-Reinforced Polymer: Updated Data Base." *International Journal of Theoretical and Applied Mechanics*, 1, (2016), 142-148.
21. Ardavan Yazdanbakhsh, **Salah Altoubat**, and Klaus-Alexander Rieder, "Analytical Study on Shear Strength of Macro Synthetic Fiber Reinforced Concrete Beams," *Engineering Structures*, (100), 2015, pp. 622-632.
22. **Salah Altoubat**, Hisseine Ousmane, Samer Barakat, "Effect of Fibers and Welded-Wire Mesh on Diaphragm Behavior of Composite deck slabs," *Steel and Composite Structures*, Vol. 19, No. 1, July, 2015, pp.153-171.
23. Moussa Leblouba, **Salah Altoubat**, Muhammed Ekhlaur Rahman and Balaji Palani Selvaraj, "Elliptical Leaf Spring Shock and Vibration Mounts with Enhanced Damping and

- Energy Dissipation Capabilities Using Lead Spring,” *Shock and Vibration*, vol. 2015, Article ID 482063, 12 pages, 2015. doi:10.1155/2015/482063.
24. Samer Barakat, Ahmad Al Mansouri, **Salah Altoubat**, “Shear Strength of Steel Beams with Trapezoidal Corrugated Webs Using Regression Analysis,” *Steel and Composite Structures*, : <http://dx.doi.org/10.12989/scs> , Vol. 18, No. 3, March 2015, pp. 757-773.
  25. Hisseine Ousmane, **Salah Altoubat**, and Samer Barakat, “Horizontal shear strength of fiber-reinforced composite deck slabs tested in the weak direction”, *International Journal of Civil and Structural Engineering* [ISSN : 2372-3971] , Vol. 2, Issue 1, April, 2015, pp. 206-210.
  26. **S. A. Altoubat**, and K.-A. Rieder, “Effectiveness of Macro Synthetic Fibers to Control Cracking in Composite Metal Decks “, *ACI- Special Publications*, , “Reduction of Crack Width with Fibers”, ACI-SP319, pp. 20-34.
  27. Moussa Leblouba, **Salah Al-Toubat**, and Mohamed Maalej, “Engineered Cementitious Composites for Improved Crack-Width Control of FRC Beams – A Review”, *ACI- Special Publications*, “Reduction of Crack Width with Fibers”, ACI-SP319, pp. 49-61.
  28. Radhi Al Zubaidi; Samer Barakat; **Salah Altoubat**, “Effects of adding brass byproduct on the basic properties of concrete,” *Construction and Building Materials Journal*, Elsevier, **38 (2013)** 236–241.
  29. **Salah Altoubat** and Deena Badran, “Shrinkage Cracking of self compacting concrete (SCC) with GGBS”, *ACI- Special Publications, SP289*, “Recent Advances in Concrete Technology and Sustainability Issues”, pp. 1-10, **2012**
  30. **Salah Altoubat**, Hussein Ousman, Samer Barakat, and Klaus-Alexander Rieder, “Viability of Synthetic Fibers to Replace Steel Wire Mesh in Composite Metal Decks Construction”, *Key Engineering Materials*, Vols. 471-472 (**2011**) pp 552-557, Trans Tech Publications, Switzerland
  31. Samer Barakat and **Salah Altoubat**, “Concrete Welding Using Steel Fibers,” *Engineering Structures Journal*, Elsevier, (32), **2010**, pp. 2065-2073
  32. **Salah Altoubat**, “Effect of shrinkage reducing admixture on time-dependent pre-stress losses in pre-tensioned beams,” *Jordan Journal of Civil Engineering, an International Refereed Research Journal*, Volume 4, No. 4, 2010, pp. 293-309.
  33. **Salah Altoubat**, “Early Age Creep and Shrinkage of Concrete with Shrinkage Reducing Admixtures,” *Jordan Journal of Civil Engineering, an International Refereed Research Journal*, Volume 4, No. 3, 2010, pp. 281-291.
  34. **Salah Altoubat**, Ardavan Yazdanbakhsh, and Klaus-Alexander, Rieder, “ Shear Behavior of Macro-Synthetic Fiber Reinforced Concrete Beams without Stirrups,” *ACI Materials Journal*, Vol. 106, No. 4, July – August , 2009, pp. 381-389
  35. Samer Barakat and **Salah Altoubat**, “Application of Evolutionary Global Optimization Techniques in the Design of RC Water Tanks,” *Engineering Structures Journal*, Elsevier, (31), 2009, pp. 332-344.

36. **Altoubat, S.**, Roesler, J, Lange, D., and Reider, K-A., "Simplified Pavement Design Method with Discrete fibers, "*Construction and Building Materials Journal*, Elseiver, (22), 2008, pp. 384-393.
37. **S. A. Altoubat**, A. Yazdanbakhsh, and K.-A. Rieder, "Effect of Synthetic Macro-Fibers on Shear Behavior of Concrete Beams ", *ACI- Special Publications, SP248, "Deflection and Stiffness Issues in FRC and Thin Structural Elements"*, 2007, pp. 41-52
38. Roesler, J., **Altoubat, S.**, Lange, D., Reider, K-A., Ulreich, G., " Effects of synthetic fibers on structural behavior of concrete slabs on ground," *ACI Materials Journal, Vol 103, No.1, Jan-Feb, 2006, pp. 3-10*
39. D'Ambrosia, M., Lange, D., Grasley, Z., Roesler, J., Lee, C., **Altoubat, S.**, " Instrumentation and Analysis of High-Performance Concrete Bridge Decks," *Journal of the Transportation Research Board, No.1914, Washington, D.C., 2005, pp. 85-96*
40. Roesler, J., Lange, D., **Altoubat, S.**, Reider, K-A., Ulreich, G., " Fracture of plain and fiber reinforced concrete slabs under monotonic loading," *ASCE Journal of Materials in Civil Engineering, Vol 16, No. 5, pp. 452-460, October, 2004*
41. **Salah A. Altoubat**, and David A. Lange, "A New Look at Tensile Creep of Fiber Reinforced Concrete ", *ACI- Special Publications, SP216, " Innovations in fiber reinforced concrete for value"*, 2003, pp. 143-159
42. **Salah A. Altoubat**, and David A Lange, "The Pickett effect at early age and experiment separating its mechanisms in tension, "*Materials and Structures Journal (RILEM), Vol. 35, May, 2002, pp. 211-218.*
43. **Salah A. Altoubat**, and David A. Lange, "Grip-specimen interaction in uniaxial restrained test", *ACI- Special Publications, SP-206, "CONCRETE: MATERIALS SCIENCE TO APPLICATIONS"*, April, 2002, pp. 189-203
44. **Salah A. Altoubat**, and David A Lange, "Creep, shrinkage and cracking of restrained concrete Discussion," *ACI Materials Journal, Vol. 99, No. 3, 2002, pp. 326-7.*
45. **Salah A. Altoubat**, and David A Lange, "The Pickett effect in early age concrete under restrained conditions," *Concrete Science and Engineering Journal (RILEM), Vol. 3, Sep., 2001, pp. 163-167*
46. **Salah A. Altoubat**, and David A Lange, "Creep, shrinkage and cracking of restrained concrete at early age," *ACI Materials Journal, Vol. 98, No. 4, 2001, pp. 323-331. (Won ACI Wason Award, 2003)*
47. **Salah A. Altoubat**, and David A Lange, "Tensile Basic Creep: Measurements and Behavior at Early Age, "*ACI Materials Journal, Vol. 98, No. 5, 2001, pp. 386-393.*
48. Lennart Østergaard, David A. Lange, **Salah A. Altoubat** and Henrik Stang, "Tensile Basic creep of early age concrete under constant load," *Cement and Concrete Research Journal, Vol. 31, Issue 12, December, 2001, pp. 1895-1899.*

## PATENTS

49. K-A. Rieder, N. S. Berke. M. B. Macklin, A. Ranganthan, **S. Altoubat**, “Highly Dispersible Reinforcing Polymeric Fibers”, USA Patent No. US 6569526 B2, May 27<sup>th</sup>, 2003
50. K-A. Rieder, N. S. Berke. M. B. Macklin, A. Ranganthan, **S. Altoubat**, “Fiber Reinforced Matrix Compositions”, USA Patent No. US 6863969 B2, March 8<sup>th</sup>, 2005

## CONTRIBUTION IN BOOKS

51. International Conference on Advances in Sustainable Construction Materials & Civil Engineering Systems (ASCMCES-17), Editors: Shanableh, A., Maalej, M., Barakat, S., Omar, M., **Al-Toubat, S.**, Al-Ruzouq, R., and Hamad K.
52. D. Lange and **S. Altoubat**, “Early age thermal”, in chapter 3: Microstructural aspects, in the State of the art report on early age cracking (RILEM TC-EAS)
53. D. Lange and S. Altoubat, “Early age creep”, in chapter 3: Microstructural aspects, in the State of the art report on early age cracking (RILEM TC-EAS)
54. A. Malkawi, S. Barakat, A. Shanableh, W. AlBdour, M. Omer, **S. Altoubat**, “Seismic Hazard Assessment and Earthquake Risk in UAE”, Technical Report, University of Sharjah, 2007, pp. 78

## PAPERS IN CONFERENCE PROCEEDINGS

55. Nassif, N., **Altoubat, S.**, Maalej, M., Estephane, P. Punching Shear Strength of Reinforced Concrete Flat Slabs with Macro Synthetic Fibers 5th International Conference on Smart Materials Research IOP Conference Series: Materials Science and Engineering, Volume 856, pp.1-7 , Brisbane, Australia, 13-16 Nov., 2019
56. Junaid MT, Elbana A., **Altoubat S**, “Predicting Flexural Capacity of Concrete Beams Reinforced with GFRP Bars and Strengthened with CFRP Sheets”, in Proceedings of the 4th World Congress on Civil, Structural, and Environmental Engineering (CSEE'19), Rome, Italy – April 7-9, 2019. DOI: 10.11159/icsect19.153
57. Elbana A, Junaid MT, **Altoubat S**, “Flexural behavior and strengthening of Geopolymer concrete beams reinforced with GFRP bars using CRPP sheets”, SynerCrete'18 International Conference on Interdisciplinary Approaches for Cement-based Materials and Structural Concrete, pp 449-454, 24-25 October 2018 Portugal
58. **Altoubat, S.**, Maalej, M., Leblouba, M., Sabour Karzad, A. “Experimental study on the out-of-plane strengthening of unreinforced masonry walls using cement-based fiber composites, 2nd Intl. Symposium on Civil and Environmental Engineering (ISCEE'18), Kuala Lumpur, Malaysia, Volume 601, Issue 1, 3 September 2019, Article number 012028

59. Yousuf, F., Talha Junaid, M., **Altoubat, S.**, “Drying shrinkage performance of ambient cured blended alkali-activated concrete,” 3rd International Conference on Material Science and Engineering Technology, ICMSET 2019; Saipan; United States; 15 March 2019 through 17 March 2019, Volume 394 DDF, 2019, Pages 109-114
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61. **Salah Altoubat**, “Performance of Discrete Fibers and Welded Wire Mesh as Secondary Reinforcement in Slab on Ground and Composite Metal Decks”, Proceedings of the 9th RILEM International Symposium on Fiber Reinforced Concrete- BEFIB 2016, 19-21 September, 2016, Vancouver, Canada, pp. 1234-1246
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65. Alberto Crespo Iniesta, Miguel Diago, **Salah Al-Toubat**, Maher Omar, Thomas Delclos, Tariq Shamim and Nicolas Calvet, “ Mechanical characterization of desert sand and design of a conical hopper for a solid particle solar receiver, Graduate Students Research Conference-UAE GSRC 2015, Abu Dhabi, March, 2015.
66. Hisseine Ousmane, **Salah Altoubat**, and Samer Barakat, “Horizontal shear strength of fiber-reinforced composite deck slabs tested in the weak direction”, Proceedings of the 2nd International Conference on the Advances of Civil, Structural , and Environmental Engineering (ACSEE), Zurich, Switzerland, October, 2014. (selected for publication in the International Journal of Civil and Structural Engineering).
67. Samer Barakat, Ahmad Al Mansouri and **Salah Altoubat**, “Experimental Study on the Shear Strength of Steel Beams with Trapezoidal Corrugated

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  69. **Salah Altoubat** and Deena Badran, “Shrinkage Cracking of self compacting concrete (SCC) with GGBS”, Recent Advances in Concrete Technology and Sustainability Issues, Prague, Czech Republic, 2012
  70. **Salah Altoubat**; Yazdanbakhsh Ardavan; Klaus-Alexander Rieder, “ Shear Strength of Beams reinforced with synthetic macro fibers,” Proceedings of the Eighth RILEM International Symposium on fiber reinforced Concrete: challenges and opportunities-BEFIB2012, Portugal, 2012, pp. 1240-1252.
  71. **Salah Altoubat**, Hussein Ousman, Samer Barakat, and Klaus-Alexander Rieder, “Viability of Synthetic Fibers to Replace Steel Wire Mesh in Composite Metal Decks Construction,” 8<sup>th</sup> International Conference on Composites Science and Technology (ICCST/8), (published in key engineering materials) Malaysia, March, 2011
  72. **Salah Altoubat** and Deena Badran, “Shrinkage Cracking of Self Compacting Concrete,” Proceedings of The International Conference on Future Concrete, Doha, Qatar, pp. 204-212, October, 2010
  73. **Salah Altoubat**, Hussein Ousman and Samer Barakat, “Diaphragm Testing of Fiber-Reinforced Composite Metal Decks with Reentrant Profile,” Proceedings of 4<sup>th</sup> international IMS Conference on Applications of Traditional and High Performance Materials in Harsh Environment, UAE, volume 1 , pp. 363-367, March, 2010
  74. **Salah Altoubat**, Samer Barakat, Yazdanbakhsh Ardavan, and Klaus-Alexander Rieder, “Shear Strength And Ductility Of Beams Reinforced With Synthetic Macro-Fibers” The Ninth International Symposium On Brittle Matrix Composites, (RILEM), Warsaw, Poland, pp. 53-62, October, 2009
  75. **Salah Altoubat** and Samer Barakat, “Shear Behavior of Concrete composites with Synthetic Macro Fibers,” Seventh International Conference on Composites Science and Technology (ICCST/7), CD-ROM, AUS, Sharjah, UAE, 2009
  76. Samer Barakat and **Salah Altoubat**, “Application of Shuffled Complex Evolution Global Optimization Technique,” Third International Conference on Modeling, Simulation, and Applied Optimization (ICMSAO'09), CD-ROM, UAE, 2009
  77. **Salah Altoubat**, Yazdanbakhsh Ardavan, “ Shear Behavior of Reinforced Concrete Beams with synthetic Macro Fibers”, 3<sup>rd</sup> international IMS Conference on Applications of Traditional and High Performance Materials in Harsh Environment, UAE, volume 1 , pp. 363-367, 2008

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79. **Salah Altoubat**, " Restrained shrinkage and early age cracking of concrete," Presented in the 2<sup>nd</sup> International Conference on Application of Traditional and High Performance Materials in Harsh Environments, American University at Sharjah, March, 2006
80. **Salah Altoubat**, " Implications of post-cracking strength of fiber reinforced concrete on structural design," 7<sup>th</sup> International Conference on Multi-Purpose High-Rise Towers and Tall Buildings (IFHS2005)," Dubai, Dec, 2005
81. **Salah Altoubat**, Roesler, J. and Reider, K-A, "Flexural capacity of synthetic fiber reinforced concrete slabs supported on ground based on beam toughness results," 6<sup>th</sup> RILEM Symposium on Fiber Reinforced Concrete BEFIB-2004, Itally, September, 2004, vol 2, pp. 1063 – 1073.
82. **Salah Altoubat**, Samer Barakat and Akthem Almanaseer, " Effect of shrinkage reducing admixtures on prestressed concrete beams," Presented in the 1<sup>st</sup> International Conference on Application of Traditional and High Performance Materials in Harsh Environments, American University at Sharjah, January, 2004
83. **Salah Altoubat**, Roesler, J. and Reider, K-A, "Effects of Synthetic fibers on structural behavior of concrete slab supported on ground," Presented in 1<sup>st</sup> International Conference on Application of Traditional and High Performance Materials in Harsh Environments, American University at Sharjah, January, 2004
84. **Salah A. Altoubat**, and David A Lange, "The Pickett effect in early age concrete under restrained conditions, "Proc. Of RILEM International Conference on Early Age Cracking in Cementitious Systems, (ed. K. Kovler and A. Bentur), March, 2001, pp. 133-143. **(selected for publication in Concrete Science and Engineering Journal, RILEM)**
85. M.D. D'Ambrosia, **S.A. Altoubat**, C. Park, and D.A. Lange, "Early Age Tensile Creep and Shrinkage of Concrete with Shrinkage Reducing Admixtures", Proc. of the Sixth International Conference CONCREEP on Creep, Shrinkage and Durability Mechanics of Concrete and Other Quasi-Brittle Materials, Cambridge, MA. USA, August 20-22, 2001, (ed. F.-J. Ulm, Z.P. Bazant, F.H. Wittmann)
86. David A. Lange, and **Salah A. Altoubat**, "Early age creep and shrinkage of cement-based matrices," Proceeding of Brittle Matrix Composites 6 (ed. Brandt, Li, Marshall), Warsaw, Poland, October, 2000, pp. 379-387.
87. **Salah A. Altoubat**, and David A. Lange "Early age shrinkage and creep of fiber reinforced concrete for airfield pavement," ASCE Proceeding

- "Aircraft/Pavement Technology: In the Midst of Change" Seattle, Washington, Aug. 17-20, 1997, pp. 229-243.
88. David A. Lange, and **Salah A. Altoubat**, "Early age shrinkage and creep of fiber reinforced concrete" Proceeding of International Conference on Engineering Materials, Ottawa, Canada, Vol. 1, June 8-11, 1997, pp. 343-355.
89. D. Lange, L. Struble, F. Young, **S. Altoubat**, H-C Shin, and H. Ai, "Early age shrinkage and creep of high performance concrete," PCI/FHWA International Symposium on High Performance Concrete, pp. 118-123, October, 1997
90. Katkhuda Izz E., **Salah Altoubat**, and Yahia Alsmadi, "Management techniques for the municipality of greater Amman, Jordan," Proceeding of the 12th IRF Conference, Madrid, Spain, 1990.

## **PRESENTATIONS AT TECHNICAL MEETINGS**

- Strengthening of Damaged Reinforced Concrete Beams Using Externally Bonded Fiber Reinforced Polymer, American Concrete Institute (ACI) Convention, Anaheim, CA, USA, October, 2017
- Effectiveness of Macro Synthetic Fibers to Control Cracking in Composite Metal Decks, American Concrete Institute (ACI) Convention, Philadelphia, PA, USA, October, 2016
- Engineered Cementitious Composites for Improved Crack-Width Control of FRC Beams – A Review, American Concrete Institute (ACI) Convention, Philadelphia, PA, USA, October, 2016
- Shear Strength of Macro Synthetic Fiber Reinforced Concrete Beams: Assessment and Applicability of Existing SFRC Models, American Concrete Institute (ACI) Convention, Kansas City, MO, USA, April, 2015
- The Effect of Supplementary Cementitious Materials On Shrinkage Cracking Of Self Compacting Concrete (SCC), 2nd Global Conference on Chemistry and Technology of Concrete "ConLife-2013", Moscow, November, 2013
- Effect of Steel and Synthetic Macro Fibers on the Diaphragm Behavior of composite metal decks, American Concrete Institute (ACI) Convention, Minneapolis, USA, April, 2013
- Shear Strength of Beams reinforced with synthetic macro fibers," Eighth RILEM Conference on fiber reinforced Concrete BEFIB2012, Portugal, 2012
- Diaphragm Behavior of FRC Composite Metal Decks Composite Metal Decks Construction", American Concrete Institute (ACI) Convention, Tampa, Florida, USA, April, 2011



- Toward a sustainable SCC through the use of high volume Fly ash and Slag to reduce cement in SCC and the effect on its cracking potential”, Middle East Conference on Sustainable Building Materials, Dubai, Feb, 2011
- Shrinkage Cracking of Self Compacting Concrete,” International Conference on Future Concrete, Doha, Qatar, October, 2010
- Shear Strength And Ductility Of Beams Reinforced With Synthetic Macro-Fibers” The Ninth International Symposium On Brittle Matrix Composites. (RILEM), Warsaw, Poland, October, 2009
- Shear Behavior of Concrete composites with Synthetic Macro Fibers, “Seventh International Conference on Composites Science and Technology (ICCST/7), AUS, Sharjah, UAE, 2009
- Effect of Synthetic Macro-Fibers on Shear Behavior of Concrete Beams\_,” ACI fall Convention, October 13 – 18, Puerto Rico, October, 2007
- Implications of post-cracking strength of fiber reinforced concrete on structural design,” 7th International Conference on Multi-Purpose High-Rise Towers and Tall Buildings (IFHS2005),” Dubai, Dec, 2005
- Flexural capacity of synthetic fiber reinforced concrete slabs supported on ground based on beam toughness results,” 6<sup>th</sup> RILEM Symposium on Fiber Reinforced Concrete, Italy, September, 2004
- Effect of synthetic fibers on structural behavior of concrete slab supported on ground, ACI spring Convention, March 14 – 18, Washington D. C., USA, 2004.
- Effect of shrinkage reducing admixtures on the losses of prestressed concrete, ACI spring Convention, March 14 – 18, Washington D. C., USA, 2004.
- The use of shrinkage reducing admixtures and fibers to increase joint spacing, ACI spring Convention, March 30 – April 3<sup>rd</sup>, Vancouver, Canada, 2003.
- Material characterization and structural aspects of the new generation of structural fibers, The Concrete Industry’s Strategic Development Council (SDC) Meeting, Boston, November, 13, 2001
- Early age tensile creep and shrinkage of concrete with shrinkage reducing admixtures, Poster presentation in ACBM semiannual technical meeting, Northwestern, March, 2001
- Early age creep and shrinkage, Annual Meeting of the American Ceramic Society, Cincinnati, April, 1997
- Tensile creep-shrinkage interaction of concrete at early age, American Ceramic Society Annual Meeting, Indianapolis, April, 1999
- Fiber reinforced concrete for high performance airport pavement, Annual review meeting of the COE at the University of Illinois, May, 1997

## **PROFESSIONAL AFFILIATION**

- Editorial Member, Cement and Concrete Composites Journal, Elsevier
- Member of American Concrete Institute (ACI)
- Member of American Society of Civil Engineers (ASCE)
- Senior Member of RILEM
- Member of Engineering Association-Jordan

## **PROFESSIONAL TECHNICAL COMMITTEES**

- Member of ACI 544 “ Fiber Reinforced Concrete”
- Member of ACI 440 “ Fiber Reinforced Polymer”
- Chair, Organizing Committee of International Conference on Sustainable Construction Materials and Civil Engineering Systems, UoS, 2017
- Technical Committee, 9th RILEM International Symposium on Fiber Reinforced Concrete BEFIB 2016, September 2016, Vancouver, Canada
- Technical Committee, Fifth International Conference on Construction Materials: Performance, Innovations and Structural Implications CANMAT 2015, August 2015, Whistler, Canada
- Member of the International Committee of the HPFRCC 6 High Performance Fiber Reinforced Cement Composites workshop, Ann Arbor, Michigan, USA

## **PROFESSIONAL REFEREEING**

- External Reviewer for ACI TAC Document (2006)
- Reviewed papers for Cement and Concrete Composites Journal (since 2008)
- Reviewed papers for ACI Materials Journal (since 2001)
- Reviewed papers for ACI Structural Journal (since 2001)
- Reviewed papers for ASCE Journal (since 2001)
- Reviewed papers for Canadian Journal in Civil Engineering (since 2006)
- Reviewed Paper for Iranian Journal (2001)

## **HONORS & AWARDS**

- Editorial Member, Cement and Concrete Composites Journal, 2013
- UOS Award for Excellence in Teaching, UOS, 2014
- Award for Outstanding Faculty in Research, UOS, 2010, and 2017
- ACI Wason Award for Most Meritorious paper, by ACI Board of Direction, March, 2003.
- Yarmouk University (Jordan), Academic Superiority Award (1983, 1984, 1985, 1987)
- University of Illinois , Conference Travel Award (1999)
- American Ceramic Society (Cement Division), Conference Travel Award (1997)

## **COMPUTER&SOFTWARE SKILLS**

- Analysis: SAP2000, Etabs, STAD PRO
- Optimization: MATLAB
- Operating Systems: Windows, DOS, UNIX
- General: MS-Office

## **COURSE WORK**

### **Ph. D Courses:**

- CE 374 Introduction to Structural Dynamics
- CE 367 Masonry Structures
- CE 467 Behavior of Reinforced Concrete Structures
- CE 466 Behavior of Reinforced Concrete Members
- CE 465 Behavior of Structural Metal Frameworks
- CE 478 Finite Element Analysis in Solid & Structural Mechanics
- CE 479 Earthquake Engineering
- CE 363 Behavior and Design of Metal Structures, II
- CE 314 Properties and Behavior of Concrete
- CE 414 Advanced Concrete Technology
- CE 498 Durability of Construction Materials
- TAM 328 Mechanical Behavior of Composite Materials

### **MS Courses:**

- Stability of Structures
- Finite Element Analysis of Structures
- Dynamics of Structures
- Numerical Methods in Structural Analysis
- Soil Properties and Their Measurements
- Earth Retaining Structures